COLORIMETER HAVING A FIELD PROGRAMMABLE GATE ARRAY

Abstract

A colorimeter capable of calibrating color monitors, whether having cathode ray tube or liquid crystal (LCD) displays, is provided by a photometric array of photodetector and optical filter pairs. The filters include long-pass, edge filters which cover overlapping regions at the upper end of the visible spectrum and a filter which covers the entire visible spectrum. The outputs of the photodetectors are digitally synthesized to provide a response which mimics the response established by the Commission Internationale de l'Eclairage (CIE) xyz (bar) functions almost perfectly. The response which is mimicked may be represented by the CIE color matching functions. The pairs and the associated components are mounted on a printed circuit board captured in a clamshell housing and having an array of apertures which define angularly constrained fields of view of a surface from which the light, to be colormetrically analyzed, emanates. The printed circuit board includes a field programmable gate array programmed to read data from the plurality of filter/detector pairs in parallel. The colorimeter is capable generally of measuring the color characteristics, especially the color temperatures of radiation radiating and reflecting bodies (sources), including so-called black bodies.